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Plan 35

TIMBER MANAGEMENT PLAN

TIMBER MANAGEMENT PLAN

Region 9

CHIPPEWA NATIONAL FOREST

JULY 1, 1974 TO JUNE 30, 1982

APPROVED: APR 4 1975

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FOREST SERVICE

TIMBER MANAGEMENT PLAN

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U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

TIMBER MANAGEMENT PLAN

CHIPPEWA NATIONAL FOREST

REGION 9

F.Y. 1975 THROUGH F.Y. 1982

		Date
Prepared By:	Marlin G. Hughes T.M. Staff Assistant	9/16/74
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Reviewed By:	John R Castles Chief, Division of Timber Management	1/17/75
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Approved By:	[signature] Regional Forester	APR 4 1975

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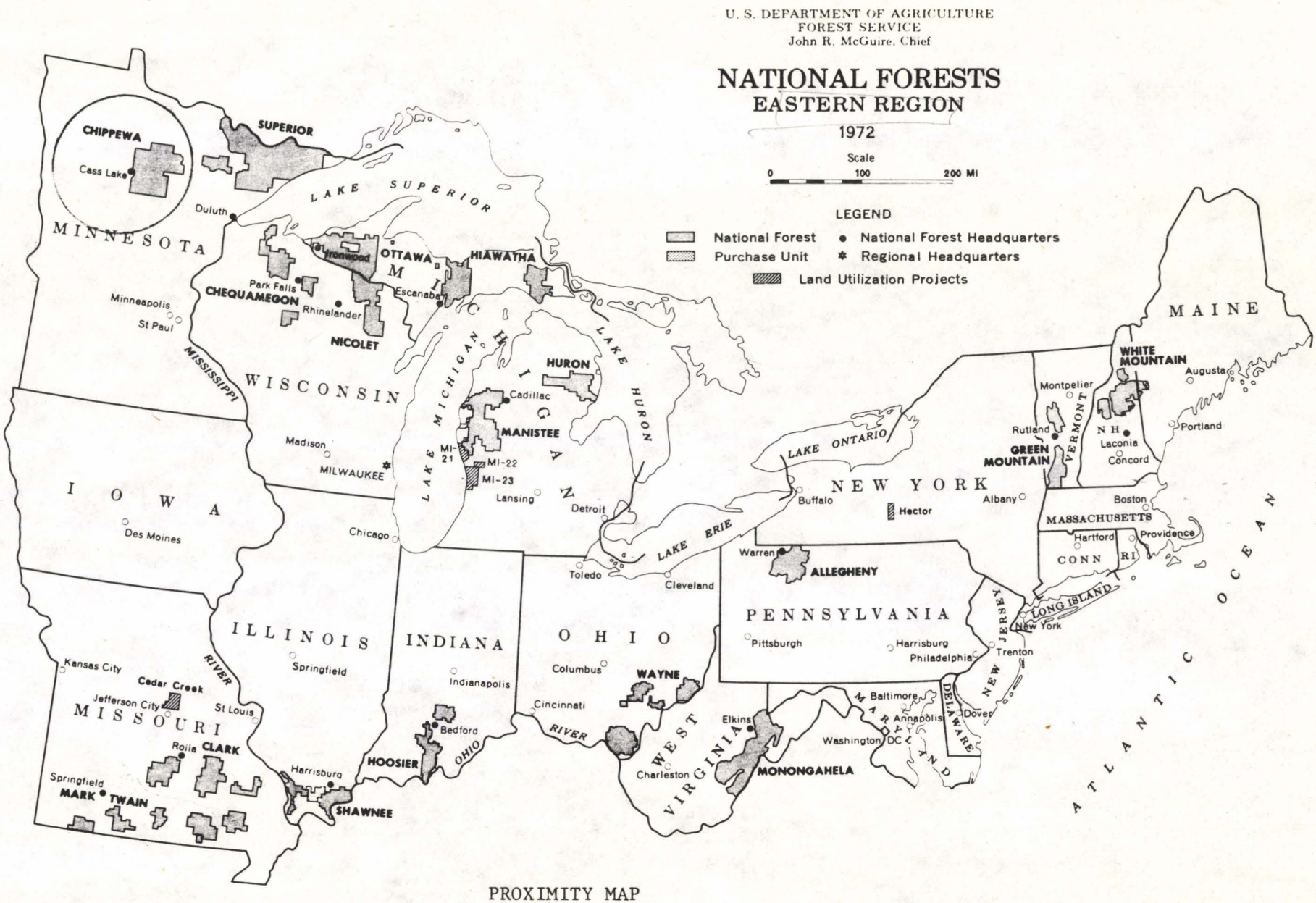
Q	Planned Entry - Cass Lake Ranger District
R	Planned Entry - Deer River Ranger District

TABLE	TITLE
S	Planned Entry - Marcell Ranger District
T	Planned Entry - Walker Ranger District

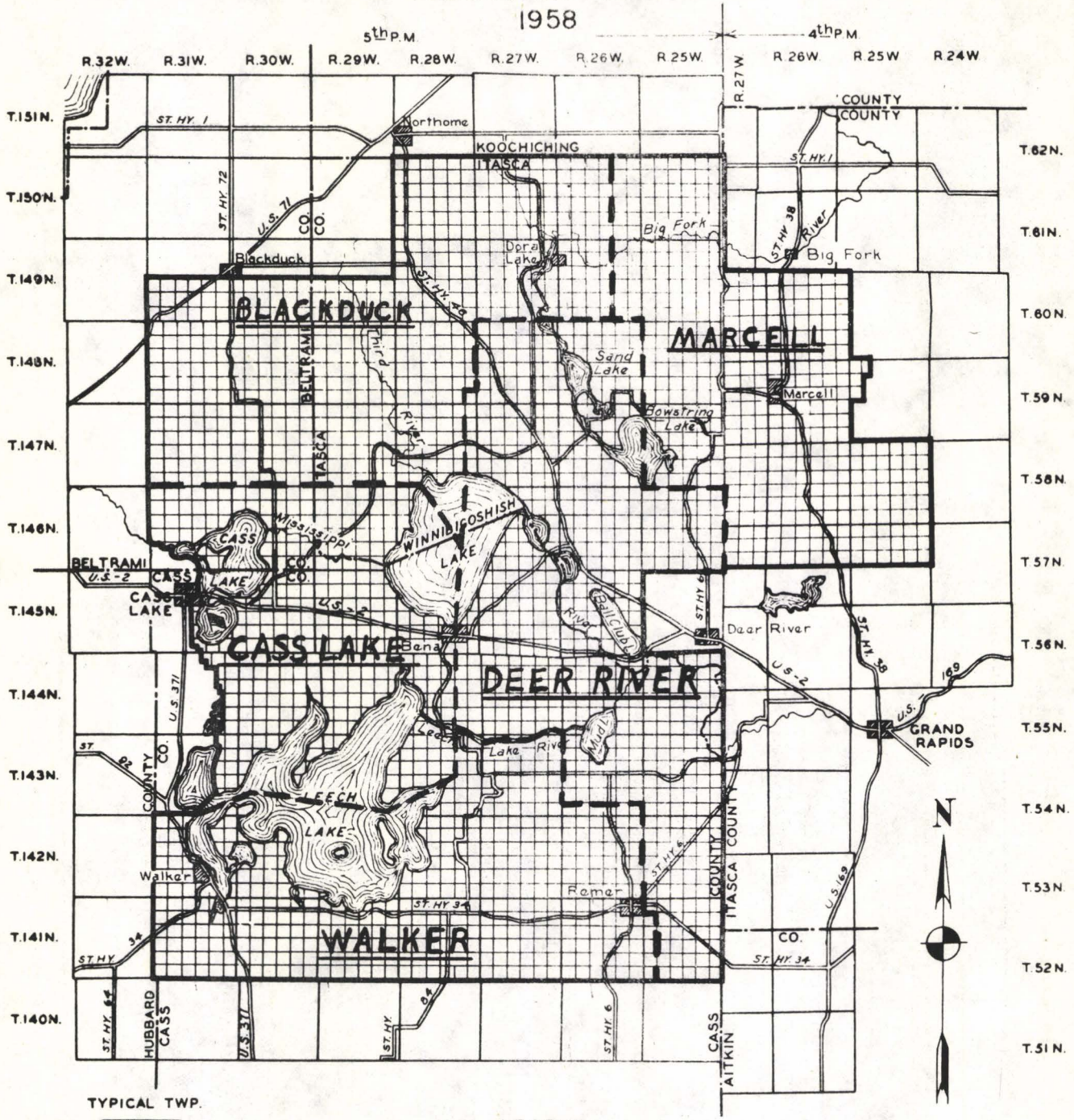


PROXIMITY MAP

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE REGION 9

CHIPPEWA NATIONAL FOREST

BELTRAMI, ITASCA, AND CASS COUNTIES
STATE OF MINNESOTA
4th & 5th PRINCIPAL MERIDIAN
1958



TYPICAL TWP.

6	5	4	3	2	1	
7	8	9	10	11	12	
18	17	16	15	14	13	
19	20	21	22	23	24	
30	29	28	27	26	25	
31	32	33	34	35	36	

SCALE
0 3 6 12 18 MILES

LEGEND
- SUPERVISOR'S OFFICE
- NATIONAL FOREST BOUNDARY
- MAIN HIGHWAYS AND ROADS
- District Boundaries

FOR INFORMATION CONTACT:
FOREST SUPERVISOR
U.S. FOREST SERVICE
CASS LAKE, MINNESOTA

II Summary

A. General

The entire Chippewa National Forest is managed as a single unit, which includes 645,739 acres of National Forest land, of which 562,253 acres are classified as commercial forest land. This compares with 639,452 acres of National Forest land and 570,382 acres of commercial forest land at the beginning of the last management plan period (1962). The drop in commercial forest land area was due mainly to classifying more of the lowland brush type as unproductive forest land.

The volume of timber on the Forest as of January 1, 1970 totaled 7,824,000 cords. This compares with the total growing stock volume of 5,845,000 cords at the beginning of the last plan period (see Table 2). The annual growth of timber equals 326,000 cords. A potential of 1,730,000 cords has been calculated for the plan period based on regeneration cuts on 82,190 acres, determined by stand prescriptions and controlled by area over rotation age, and 59,390 acres of intermediate cuts. The programmed allowable harvest cut of 144,000 cords is based on present markets, logging, operability, and financing in relation to the allowable cut.

Reforestation needs during the plan period and related to the allowable regeneration cut acreage included the planting and seeding of 9,400 acres to pine and spruce following regeneration cuts in upland conifer types and the conversion of 10,100 acres of brush, understocked, and hardwood types to pine or spruce to approach the planned composition objectives for timber types by physiographic regions. Other reforestation needs include site preparation to ensure satisfactory regeneration

of 55,600 acres of aspen and other hardwood types planned for type maintenance following final harvest cuts. Timber stand improvement needs during the period included 30,000 acres of regeneration release of plantations to be established, 28,600 acres of release in natural stands and older plantations, 54,000 acres of crop tree thinning or cull removal, and 9,600 acres of pruning.

Table 1. Comparison of Old and New T.M. Plan Land Components.

3-30-69

Commercial Forest Land	Old Plan Acres*	New Plan Acres*
Regulated Non-Modified (Standard)	550,400	508,800
Regulated Modified (Special)	20,000	45,000
Unregulated		8,500
Commercial Forest Land Total	570,400	562,300
Productive Reserved	1,200	1,900
Productive Deferred	-0-	-0-
Unproductive Forest Land	11,300	26,300
Non-Forest Land		
Non-Forest Land ("land area")	52,200	46,900
Nonmeandered Water	4,400	8,300
Non-Forest Land Total	56,600	55,200
Total All Land	639,500	645,700

* All acres rounded to 100 acres

The increase in the unproductive forest land is due to classifying more of the lowland brush type as unproductive. This also accounted for the decrease in commercial forest land even though there was an increase in National Forest land area. The unregulated acres under this plan include the Cut Foot Sioux, Pike Bay and Marcell Experimental Forests, recreation and administrative sites.

The periodic net annual growth increased from 41 cubic feet per acre per year to 46 cubic feet per acre per year.

The projected mean annual increment is estimated to be 79 cubic feet per acre per year when all areas have obtained the optimum stocking levels with the species suitable for the site.

Table 2. Growing Stock Volume Change from 1948 to 1971 by Species and Species Groups. Chippewa National Forest

SPECIES GROUPS :	1948	: 1960	: Change	: 1971	: Change
			(MM Cubic Ft.)		
Balsam Fir	22.9	36.2	+13.3	27.6	- 8.6
White Pine	25.0	18.6	- 6.4	28.8	+10.2
Red Pine	43.5	47.2	+ 3.7	75.0	+27.8
Jack Pine	24.4	26.8	+ 2.4	38.6	+11.8
Spruce	16.9	16.9	0	24.4	+ 7.5
Cedar & Tamarack	17.6	18.9	+ 1.3	31.0	+12.1
All Softwoods	150.3	164.6	+14.3	225.4	+60.8
Northern Hardwoods[1/]	12.2	25.9	+13.7	36.2	+10.3
Aspen	82.4	170.5	+88.1	186.0	+15.4
Paper Birch	30.7	46.8	+16.1	72.6	+25.8
Other Hardwoods	39.9	54.0	+14.1	97.9	+44.0
All Hardwoods	165.2	297.2	+132.0	392.7	+95.5
Total	315.5	461.8	+146.3	618.1	+156.3

1/ Sugar Maple, Yellow Birch and Basswood

USDA Forest Service

STANDARD TIMBERLAND USE CLASSIFICATION

DATE: 03 / 12 / 74

(1-2) REGION NO.	(3-4) FOREST NO.	(5-6) SUBUNIT NO.	(7-8) STATE NO.	(9) CLASS 1 OR 2	EFFECTIVE FY START	PERIOD BASIS END
09	03	00	27	1	1-9-7-5 (10-13)	1-9-8-2 (14-17)

NET NATIONAL FOREST OWNERSHIP

	LAND CLASS CODE (18-19)	AREAS M ACRES (20-26)	VOLUME [1] M CUNITS (27-34)	VOLUME [1] MMBF (35-42)	TOTAL ANNUAL GROWTH M CUNITS (43-50)	TOTAL ANNUAL GROWTH MMBF (51-58)
WATER	10					
NON-FOREST	20					
PRODUCTIVE RESERVED	30	1.0	12.8	7.7	0.3	0.2
PRODUCTIVE DEFERRED	40					
STANDARD COMPONENT	50	161.7	2038.2	1290.5	66.1	41.9
P&M Reforestation Backlog	--	2.7	0.0	0.0	0.0	0.0
P&M TSI Backlog	--	3.8	0.0	0.0	0.0	0.0
Other Standard	--	155.2	2038.2	1290.5	66.1	41.9
TOTAL P&M REF. BACKLOG	--	3.0				
TOTAL P&M TSI BACKLOG	--	4.2				
SPECIAL COMPONENT	60	15.3	157.8	99.8	5.1	3.2
Travel Influence Zone	61	7.1	67.6	42.8	2.2	1.4
Water Influence Zone	62	7.5	90.2	57.0	2.9	1.8
P&M Reforestation Backlog	--	0.3	0.0	0.0	0.0	0.0
P&M TSI Backlog	--	0.4	0.0	0.0	0.0	0.0
MARGINAL COMPONENT	70	12.0	0.0	0.0	0.0	0.0
P&M Reforestation Backlog	XXXX	0.0	0.0	0.0	0.0	0.0
P&M TSI Backlog	XXXX	0.0	0.0	0.0	0.0	0.0
Access Road	XXXX					
Reforestation not feasible	--	12.0	0.0	0.0	0.0	0.0
UNREGULATED COMPONENT	80	2.9	45.1	28.5	1.5	0.9
Experimental Forests	--	2.7	40.6	25.7	1.3	0.8
Developed Adm. & Rec. Sites	--	0.2	4.5	2.8	0.2	0.1
UNPRODUCTIVE FOREST	90	25.8	0.0	0.0	0.0	0.0
NET NATIONAL FOREST TOTALS	99	218.7	2253.9	1426.5	73.0	46.2

PRODUCTIVE FOREST

COMMERCIAL FOREST

FOREST

[1] -- % of the volume from class - areas (59-60) (61)

GPO 865-184 2400-26a (5-73)

USDA – (t Service

STANDARD TIMBERLAND USE CLASSIFICATION

DATE: 03 / 12 / 74

(1–2) REGION NO.	(3–4) FOREST NO.	(5–6) SUBUNIT NO.	(7–8) STATE NO.	(9) CLASS 1 OR 2	EFFECTIVE FY START	EFFECTIVE FY END	PERIOD BASIS
09	03	00	27	2	1975	1982	
					(10-13)	(14-17)	

NET NATIONAL FOREST OWNERSHIP 9

| | | | | |

USDA - Forest Service

POTENTIAL YIELD OR PROGRAMED ALLOWABLE HARVEST STATEMENT

(Instructions : FSM 2491)

[X] Potential Yield [ ] Programed Allowable Harvest

REGION NO	FOREST NO	SUB UNIT NO	STATE NO	CLASS 1 OR 2	WORK GROUP
09	03	00	27	1	00
(1-2)	(3-4)	(5-6)	(7-8)	(9)	(10-11)

		LAND CLASS CODE	ACTIVITY CODE	AREA M ACRES	SAWTIMBER M CUNITS	SAWTIMBER MMBF	PRODUCTS M CUNITS	PRODUCTS M CORDS
		12-13	14-16	17-23	24-30	31-37	38-44	45-51
STANDARD COMPONENT	PATCH, STRIP, STAND	50	110	13.6	69.0	43.7	56.3	71.2
	SHELTERWOOD-SEED TREE							
	Seed Cuts	50	130					
	Removels (overstory)	50	140					
	SELECTION	50	150					
	INTERMEDIATE	50	200	15.2	77.3	48.9	63.0	79.8
	P&M Ref. Backlog [1]	5_	400	2.7	0.0	0.0	0.0	0.0
	P&M TSI Backlog [2]	5_	500	3.8	0.0	0.0	0.0	0.0
		5_						
		5_						
		5_						
		5_						
		5_						
		5_						
	TOTAL P&M REF. BACKLOG [1]	5~~X~~	400	3.0				
	TOTAL P&M TSI BACKLOG [2]	5~~X~~	500	4.2				
	STANDARD TOTAL	50		35.3	146.3	92.6	119.3	151.0
SPECIAL	Patch, Strip, Stand (WIZ+TIZ)	6_	110	0.8	4.0	2.5	3.2	4.1
	Intermediate (WIZ+TIZ)	6_	200	0.8	4.0	2.5	3.2	4.1
	P&M Ref. Backlog [1]	6_	400	0.3	0.0	0.0	0.0	0.0
	P&M TSI. Backlog [2]	6_	500	0.4	0.0	0.0	0.0	0.0
		6_						
		6_						
	SPECIAL TOTAL	60		2.3	8.0	5.0	6.4	8.2
MARGINAL	REFORESTATION BACKLOG [1] P&M	~~71~~	400	0.0	0.0	0.0	0.0	0.0
	TSI BACKLOG [2] P&M	~~72~~	500	0.0	0.0	0.0	0.0	0.0
	ACCESS ROAD	~~73~~						
		7_						
		7_						
		7_						
		7_						
	MARGINAL TOTAL	70		0.0	0.0	0.0	0.0	0.0
UNREGULATED TOTAL		80		0.2	0.3	0.2	0.0	0.0
Potential or Programed TOTAL		99		37.8	154.6	97.8	125.7	159.2

EFFECTIVE PERIOD FY BASIS	
START (56-59)	END (60-63)
1975	1982

REMARKS: [1] Increases are earned at the rate of ___ (64-66) (1. Bd. ft. / 2. Cu. ft.)* per acre per year for each acre reforested since plan revision and will be harvested from standard areas.

[2] Increases are earned at the rate of ___ (68-70) (1. Bd. ft. / 2. Cu. ft.)* for each acre accomplished previous fiscal year and will be harvested from standard areas.

*Cross out cu. ft. or Bd. ft.

APPROVED BY:	TITLE:	DATE:
		3-12-74

SP [illegible]-176

2400-26b (5/73)

USDA - Forest Service

POTENTIAL YIELD OR PROGRAMED ALLOWABLE HARVEST STATEMENT

(Instructions : FSM 2491)

[X] Potential Yield [ ] Programed Allowable Harvest

REGION NO	FOREST NO	SUB UNIT NO	STATE NO	CLASS 1 OR 2	WORK GROUP
09	03	00	27	2	00
(1-2)	(3-4)	(5-6)	(7-8)	(9)	(10-11)

		LAND CLASS CODE	ACTIVITY CODE	AREA M ACRES	SAWTIMBER		PRODUCTS	
					M CUNITS	MMBF	M CUNITS	M CORDS
		12-13	14-16	17-23	24-30	31-37	38-44	45-51
STANDARD COMPONENT	PATCH, STRIP, STAND	50	110	43.2	194.8	123.3	272.0	340.5
	SHELTERWOOD-SEED TREE							
	Seed Cuts	50	130	1.6	1.6	1.0	15.8	20.0
	Removals (overstory)	50	140					
	SELECTION	50	150					
	INTERMEDIATE	50	200	3.2	2.4	1.5	17.9	22.7
	P&M Ref. Backlog [1]	5_	400	6.6	0.0	0.0	0.0	0.0
	P&M TSI Backlog [2]	5_	500	0.0	0.0	0.0	0.0	0.0
		5_						
		5_						
		5_						
		5_						
		5_						
		5_						
	TOTAL P&M REF. BACKLOG[1]	X	400	10.0				
	TOTAL P&M TSI BACKLOG[2]	X	500	0.0				
		5_						
	STANDARD TOTAL	50		54.6	198.8	125.8	305.7	383.2
SPECIAL	Patch, Strip, Stand (WIZ + TIZ)	6_	110	0.6	0.0	0.0	4.2	5.3
	Seed Cuts (WIZ + TIZ)	6_	130	0.1	0.0	0.0	0.2	0.4
	Intermediate (WIZ + TIZ)	6_	200	0.1	0.0	0.0	0.3	0.3
	P&M Ref. Backlog[1]	6_	400	0.7	0.0	0.0	0.0	0.0
	P&M TSI Backlog[2]	6_	500	0.0	0.0	0.0	0.0	0.0
		6_						
	SPECIAL TOTAL	60		1.5	0.0	0.0	4.7	6.0
MARGINAL	REFORESTATION BACKLOG[1] P&M	~~71~~	400	2.7	0.0	0.0	0.0	0.0
	TSI BACKLOG [2] P&M	~~72~~	500	0.0	0.0	0.0	0.0	0.0
	ACCESS ROAD	~~73~~						
	WEAK MARKETS	7_	100	33.7	123.3	78.1	168.3	213.0
	WEAK MARKETS	7_	200	2.5	1.3	0.8	10.7	13.6
		7_						
		7_						
	MARGINAL TOTAL	70		38.9	124.6	78.9	179.0	226.6
UNREGULATED TOTAL		80		0.2	0.0	0.0	3.2	4.0
Potential or Programed TOTAL		99		95.2	323.4	204.7	492.6	619.8

EFFECTIVE PERIOD FY BASIS	
START (56-59)	END (60-63)
1975	1982

REMARKS: [1] Increases are earned at the rate of ___ (64-66) (1. Bd. ft. / 2. Cu. ft.) * per acre per year for each acre reforested since plan revision and will be harvested from standard areas.

[2] Increases are earned at the rate of ___ (68-70) (1. Bd. ft. / 2. Cu. ft.) * for each acre accomplished previous fiscal year and will be harvested from standard areas.

*Cross out cu. ft. or Bd. ft.

APPROVED BY:	TITLE:	DATE:
		3-12-74

GPO 865-176

2400-26b (5/73)

C. Net Volume Data (All Commercial Forest Land)

Inventory

Sawlog Material:		MBF[1/]	MCF[2/]
Softwood		727,881	115,006
Hardwood		945,579	149,401
	Subtotal	1,673,460	264,407

Other Products:		Cords	MCF
Softwood		1,397,881	110,383
Hardwood		3,079,948	243,316
	Subtotal	4,477,204	353,699

All Growing Stock:		Cords	MCF
Softwood		2,853,018	225,389
Hardwood		4,971,106	392,717
	Subtotal	7,824,124	618,106

Periodic Net Annual Growth

Sawlog Material:		MBF	MCF
Softwood		19,310	3,051
Hardwood		44,222	6,987
	Subtotal	63,532	10,038

Other Products:		Cords	MCF
Softwoods		53,754	4,247
Hardwoods		144,769	11,436
	Subtotal	198,523	15,683

All Growing Stock:		Cords	MCF
Softwood		92,374	7,298
Hardwood		233,213	18,423
	Subtotal	325,587	25,721

[1/] Local Scale, Scribner D.C. Rule (Multiply by 1.15 to convert to International 1/4 rule)

[2/] 1 cord = 79 cubic feet

F. Silviculture and Management Needs and Planned Objectives

Table 5. Treatment Needs and Estimated Planned Work Program
Chippewa National Forest

Item	Total Need	Plan Period Objectives
Compartment Examination (acres)	645,739[4/]	553,789[5/]
Potential Yield		
Sawtimber (MMBF) Scribner Dec. Log Rule	352	280[1/]
Other Products (M Cords)	1,028	880[1/]
Site Preparation:		
For natural regeneration (acres)	55,600	45,000
For artificial regeneration (acres)	19,500	18,000
Planting (acres)	17,500	16,000
Seeding (acres)	2,000	2,000
TSI:		
Thinning precommercial or Cull removal (acres)	54,000	20,000[2/]
Release & Weeding (acres)	58,600	55,600
Pruning (acres)	9,600	9,600
Timber Roads (miles)	600	600[3/]
Property Lines (miles)	3,551	900
Rights-of-Way (cases)	81	60

[1/] Programmed Allowable Harvest -- 72.0 MMBF/year

[2/] Improved Markets will reduce the need for precommercial thinnings

[3/] Includes new construction and upgrading present roads

[4/] Total Forest Ownership

[5/] Regulated Commercial Forest Land

G. Plan Revision

The effective period of this plan is F.Y. 1975 through F.Y. 1982, (8 years) with annual revisions as needed. Reinventory will be completed in F.Y. 1982 and a new plan written at that time.

DESCRIPTION OF NATIONAL FOREST

A. General

The Chippewa National Forest is located in north central Minnesota in the area described as the central pine belt. The soils in the area are derived from parent materials deposited during several periods of glaciation which has left a wide variation of complex formations. The topography ranges from relatively level outwash plains in the central part to rolling hills and ridges with numerous pot hole lakes in the northeast and southwest. Three large lakes, Leech, Winnibigoshish, and Cass dominate the physical features. The Mississippi River flows through Cass and Winnibigoshish as it traverses from west to east through the middle of the Forest. Most of the Forest in the Mississippi River Drainage. The northeastern part is in the Rainy River Drainage and a small portion in the northwest is in the Red River Drainage.

National Forest Land as of June 30, 1969 totaled 645,739 acres which is 49% of the gross land area within the Forest Boundary. Other ownerships include State, County, Indian and private. Scattered ownership requires considerable land line location work in connection with timber management projects.

District Multiple Use Plans and maps outline the Travel and Water Influence Zones and lists the objectives within these zones. Timber management practices within these zones are modified to aid in reaching the stated objectives. Travel and Water Influence Zones include 44,924 acres of commercial forest land which is 8% of the total commercial forest land.

The aspen type covers 206,964 acres of 37% of the commercial forest land. At the time of the last inventory the aspen acreage was 274,820 acres. The volume of aspen growing stock has increased from 2,158,155 cords to 2,354,356 cords in 10 years. Since the last inventory a change has occurred in the attitude toward aspen as a component of the Forest. Markets have developed plus the importance of aspen in the game habitat has elevated its ranking in the overall resource managment picture. Forty-two percent of the aspen type is over 40 years of age. Prescriptions for regeneration cuts were made on 78,444 acres, but 58% of these areas must be scheduled for regeneration cuts this period based on the area over rotation age control. Aspen stands of rotation age in good condition will be held until the next period.

The red pine type comprises 10% of the commercial forest land. The type increased by 12,880 acres since the last inventory and occurred as a result of species conversion by planting. The volume of red pine growing stock has increased from 596,847 cords to 948,938 cords in the last ten years - a 59% increase.

The northern hardwood type covers 58,922 acres of 10% of the commercial forest land. This type occupies the most productive land on the Forest, but produces only 7-1/2% of the allowable cut due to the deteriorated condition of the stands.

Maple rarely produces an acceptable sawtimber product due to heavy frost cracking and rot. Selection cuttings have increased the maple component to the extent that many stands are of marginal operability or are unmerchantable while supporting a high basal area of large cull trees. Northern hardwoods during this plan period will be managed under applicable marking guides to increase the component of the desirable species.

The paper birch type which covered 15,930 acres at the time of the last inventory now occupies 49,244 acres of commercial forest land. Some of this increase is due to the cutting of the aspen in mixed stands of aspen and birch and some due to the change in typing instructions. At the last inventory the type was determined by the species which would be harvested or in need of treatment in the period. Types are now determined by the predominant species in the managed stand.

The spruce-fir type has increased from 12,969 acres to 42,991 acres of commercial forest land in the last ten years. Part of this increase is due to conversion by planting spruce, and the rest to natural conversion. The jack pine type shows only a slight decrease in acres from 28,586 to 28,083. No jack pine was planted during the period and most areas receiving regeneration cuts were converted to red pine. Only 320 acres of jack pine is in the seedling-sapling size class. The majority is in well-stocked poles 40-50 years of age. Regeneration plans for jack pine during the period called for the seeding of 2,000 acres of jack pine. Regeneration cut prescriptions were

made for 9,299 acres, but only 4,500 acres are planned for the period as determined by type acreage divided by rotation age. This means that jack pine stands of rotation age in good condition must be carried over to the next cutting period.

The black spruce type covers 31,167 acres in regulated commercial forest land with 9,442 acres in the 80+ age class. The 0-29 age class contains only 2,546 acres. To help correct the imbalance in age class distribution the regeneration cut acres as determined by the type acreage divided by the rotation age of 100 which is 312 for the annual allowable cut will be used rather than the prescribed regeneration cut acreage of 161 acres. This means that the 90+ age class will receive regeneration cuts and some of the 85 year age class on better sites.

B. Boundaries

The extremities of the Forest extend from the south boundary of T141N 5th Principal Meridian to the north line of T150N 5th Principal Meridian, and from the west line of R31W 5th Principal Meridian to the east line of R25W 4th Principal Meridian.

C. Subdivisions

Ranger Districts on the Forest and acreage of National Forest land as of 6/30/69:

	District	Acres
1.	Blackduck	137,114
2.	Cass Lake	107,719
3.	Deer River	155,263
4.	Marcell	129,177
5.	Walker	116,177
	N.F. Total	645,739

D. Relation of Other Forests

The Superior N.F. in N.E. Minnesota and the Chippewa N.F. are closely related in supplying timber to the large paper companies: Northwest Paper, Blandin, and Boise Cascade obtain substantial volumes of wood from both Forests. Sawmills and treating plants generally are restricted to one or the other Forest. However, with the increase use of small material in various press boards and other manufactured products, there will be closer relationship in supply and demands for all products sold on both Forests.

E. Land Ownership

The gross land area within the Chippewa N.F. is 1,313,792 acres. The percent of area by ownership class is as follows:

N.F.	State	County	Other Federal	Private
49%	20%	7%	2%	22%

F. Multiple-Use Management Zones

Detailed Multiple-Use Zone descriptions and guidelines are included as Chippewa N.F. Supplements to the Eastern Region Multiple-Use Management Guide Handbook.

DESCRIPTION OF FOREST CONDITION

There are 27,744 acres of upland types that are poorly stocked. The aspen type has the largest acreage of poorly stocked area with 12,265 acres. Paper birch is next with 7,373 acres. Most poorly stocked stands will be operable and receive high priority for regeneration cuts, and the areas will be reforested to full stocking.

Regulated commercial forest land is approximately 82 percent upland and 18 percent lowland. The land is quite productive for growing timber and is relatively flat and free of rock, making harvesting and other treatments fairly easy. Aspen is by far the largest type and occupies 37% of the regulated commercial forest land or 45 percent of the upland area. Conifers are growing on 28 percent of the upland area and hardwoods on 72 percent. Before the early logging and fires these percentages were just about reversed. The Forest is reaching a more mature condition, especially for pulpwood species, but the allowable cut is still only about half of the growth. An imbalance in some of the age classes requires that some stands will be carried beyond the rotation age. The potential yield of timber based on site capabilities is estimated at 1.6 times the present growth of 326,000 cords per year. In the last management plan the total yield for the Forest in the year 2000 was predicted at 320,000 cords per year. This has already been exceeded. The average acres of stocked commercial forest land contained 8.8 cords in 1948, 11.1 cords in 1960 and 14.3 cords in 1970.

A. Forest Type-Size Density

The increase in the spruce-fir type is attributed to natural conversion following regeneration cuts in aspen and reforestation to White Spruce. The white pine type will continue to decrease until rust resistant planting stock is available for reforesting. The increase in red pine is due to conversion of other types of planting. The oak type increase is most likely due to the harvesting of aspen where oak was present resulting in a conversion. This conversion from aspen also accounts for the increased in lowland hardwoods. Non-timbered area decreased as a result of reforestation and classifying more of the lowland brush type as unproductive.

Table 6. Comparison of Commercial Forest Land By Forest Type and Selected Years

	1960		1970	
Forest Type	Acres	%	Acres	%
Spruce-Fir	12,964	2	42,991	8
White Pine	7,950	1	4,428	1
Red Pine	44,464	8	57,344	10
Jack Pine	28,586	5	28,083	5
Swamp Conifers	21,212	4	12,651	2
Black Spruce	22,297	4	31,367	6
Tamarack	16,184	3	7,190	1
Oak	6,780	1	10,987	2
Aspen	274,810	48	206,964	37
Northern Hdwds.	56,181	10	58,922	10
Lowland Hdwds.	17,689	3	38,808	7
Paper Birch	15,943	3	49,244	9
Nonstocked	45,322	8	13,274	2
	570,382	100	562,253	100

Table 7. Percentage Change in Acreage Within Various Forests Types for the Ten-Year Period Between Inventories

FOREST TYPE	CHANGE (Acres)	CHANGE (Percent)
SOFTWOODS:		
Spruce-Fir	+30, 027	+232
White Pine	-3, 522	-44
Red Pine	+12,880	+29
Jack Pine	-503	-2
Swamp Conifers	-8,495	-14
HARDWOODS:		
Northern Hardwoods	+2,741	+5
Oak	+4,207	+62
Lowland Hardwoods	+21,119	+119
Aspen-Birch	-34,545	-12
Nontimbered	-32,048	-71

B. Area Condition

Table 8. Area of Commercial Forest Land by Forest Type and Percent Stocking of Desirable Trees - All Stocked Commercial Forest Land

Forest Type	Total	Stocking of Desirable Trees[1]	
		Adequate[2]	Inadequate[3]
Spruce-Fir	42,991	39,151	3,840
White Pine	4,428	4,348	80
Red Pine	57,344	56,102	1,242
Jack Pine	28,083	27,857	226
Swamp Conifers	12,651	10,936	1,715
Black Spruce	31,367	27,763	3,604
Tamarack	7,190	5,906	1,284
Oak	10,987	9,545	1,442
Aspen	206,964	194,699	12,265
Northern Hdwds.	58,922	57,646	1,276
Lowland Hdwds.	38,808	34,354	4,454
Paper Birch	49,244	41,871	7,373
Total Acres	548,979	510,178	38,801
Percent	100%	93%	7%

1/ Tree species presently or prospectively suitable for industrial wood products.

2/ 40% or more stocked

3/ Less than 40% stocked

D. Age Class Structure

The spruce-fir age class distribution is unbalanced having only 11 percent of the type under 30 years of age. No acres are listed in the 20 - 29 age class. This gap will be taken care of by holding stands beyond the rotation age that are in good condition during this plan period and the next.

Very few acres of the red and white pine type will be at rotation age during this plan period. The full allowable "biological" regeneration cut acreage will not be reached until 40 years. The largest acreage is in the 0 - 09 age class which resulted from planting during the last plan period.

Only 234 acres of the jack pine type are under 30 years of age. About half the regeneration cuts in the jack pine type for this plan period will be maintained and the remainder will be converted to red pine to take advantage of soil capabilities and create diversity.

The swamp conifer types are all low in acreage in the 0 - 40 year age classes. No acreage is listed for the 0 - 09 age class. These types will be maintained to the extent possible on regeneration cut areas during this plan period.

Over 70 percent of the aspen type is between 30 and 49 years of age. Aspen acreage of rotation age or older equal to the "biological" regeneration cut acres can be maintained for the next 30 years by holding stands in good condition beyond the rotation age.

Hardwoods other than aspen are low in acreage in ages 0 - 29. Younger age classes must be established, but the 30 year gap will have to be bridged by holding some stands beyond rotation age prior to the time these age classes are scheduled for regeneration.

Table 10. Proportion of Commercial Forest Land By Stand Size Class and Years - All Commercial Forest Land

Stand Size Class	Year Percent	
	1960	1970
Sawtimber	16	15
Poletimber	67	69
Restocking	9	14
Nonstocked	8	2
Total	100	100

The area in restocking increased in the last 10 year period but is still far short of the optimum. The shortage of restocking area can be attributed mainly to the inability to harvest the allowable cut in the past.

C. Site

The Forest contains relatively good sites for growing timber and ranks as one of the highest in the Region in overall site quality. The poorest sites are in the swamps and are mainly in swamp conifers, black spruce and tamarack types. Forty percent of the aspen-paper birch type is on good sites and 16% on excellent sites. Seventy percent of the spruce-fir type is on excellent site. Thirteen and one half percent of the regulated stocked commercial forest land is classified as excellent site for the species now occupying the land.

Regulated Stocked * Commercial Forest Land

Forest Type	Total	Area (Acres) By Site Classes			
		Poor	Medium	Good	Excellent
Spruce-Fir	42,830	150	3,990	8,820	29,870
Red- White- Jack Pine	86,460	6,260	61,900	15,230	3,070
Swamp Conifers	50,940	46,840	3,480	620	
Oak	10,980		10,060	920	
Aspen-Paper Birch	253,770	12,940	99,030	101,100	40,700
Northern Hdwds.	56,810	21,340	21,610	13,860	
Lowland Hdwds.	38,810	21,890	13,780	3,140	
Total	540,600	109,420	213,850	143,690	73,640

*All acreages rounded to the nearest 10 acres.

*Regulated Stocked Commercial Forest Land

Twenty percent of the regulated stocked commercial Forest Land is classified as poor sites. However, sixty-three percent of the poor sites are swamp conifer or lowland hardwood types where species selection and productivity are limited without drainage. The remaining thirty-seven percent of poor sites are in upland type that will be managed so as to match species with soils to produce the maximum yields within economic restraints in effect.

Table 11. Total Net Volume of Growing Stock and Sawlog Material on Timbered Commercial Forest Land by Species or Species Group

Species	Growing Stock (M Cu.Ft.)	Sawlog Material (M Cu.Ft.)[1/]
Red and White Pine	103,791	80,145
Jack Pine	38,578	14,561
Balsam Fir	27,545	6,832
White Spruce	4,345	3,380
Swamp Conifers	51,130	10,087
Aspen	185,994	73,284
Paper Birch	72,643	22,086
N. Hardwoods	39,128	17,472
Msc. Hardwoods	94,952	36,560
Total	618,106	264,407

[1/] Scribner D.C. Log Rule

E. Nonstocked Areas

The percent of nonstocked area will probably not be reduced due to the value of openings for wildlife and other purposes.

F. Growth and Mortality

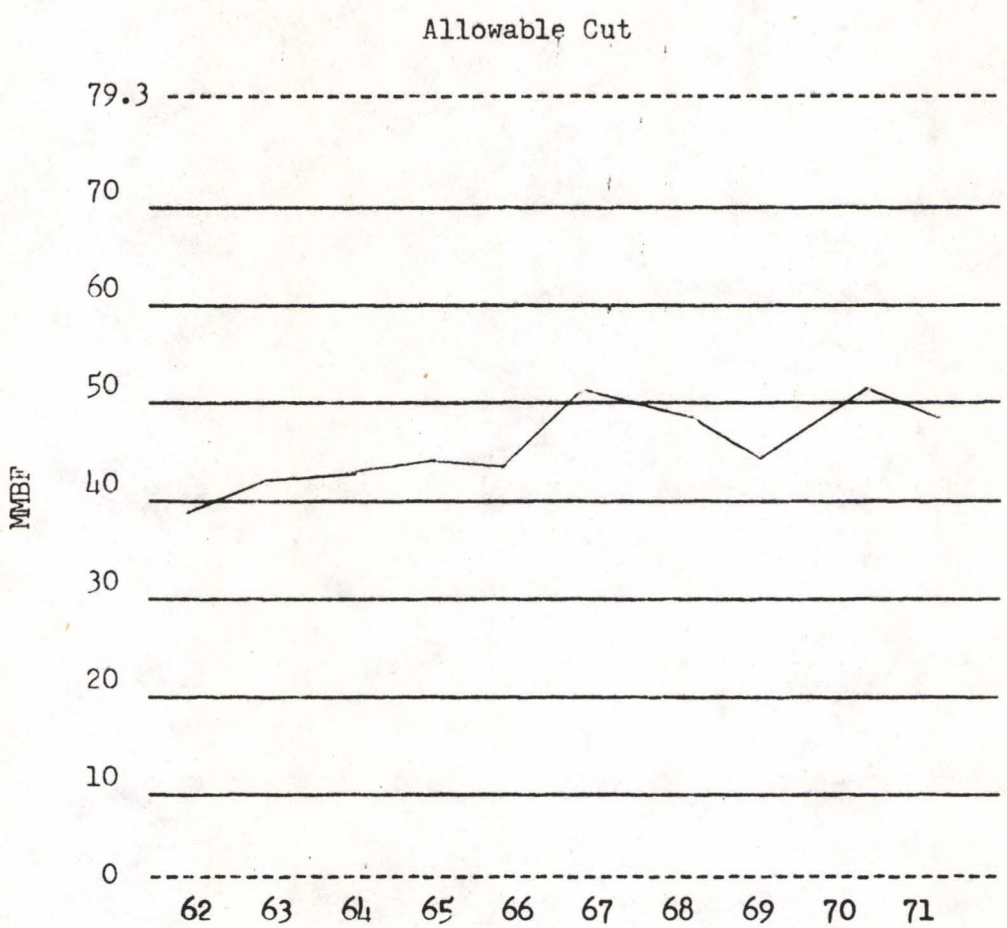
Periodic net annual growth equals 326,000 cords or 25,700,000 cu. ft. Aspen contributes most to the periodic net annual growth in relation to the growing stock volume. As expected swamp conifers annual growth is the least in relation to the volume of growing stock. Site is considered the main reason for this difference in growth. Much of the aspen is in the pole size class where maximum growth is attained. The sawtimber proportion of the periodic net annual growth has increased from 30 percent at the time of the last inventory to 39 percent. An 11 percent increase in the annual growth occurred in the last 10 years. The average growth per acre per year on stocked commercial forest land was .55 cords in 1948, .56 cords in 1960 and .60 cords in 1970.

Table 12. Total Periodic Net Annual Growth of Growing Stock and Sawlog Material on Timbered Commercial Forest Land by species or Species Group

Species or Species Group	Growing Stock (M Cu.Ft.)	Sawlog Material (MBF)
Red and White Pine	3,270	14,241
Jack Pine	1,147	683
Balsam Fir	1,171	1,178
White Spruce	57	491
Swamp Conifers	1,653	2,717
Aspen	10,393	18,879
Paper Birch	2,938	6,909
N. Hardwoods	1,725	6,810
Misc. Hardwoods	3,367	11,624
Total	25,721	63,532

Comparison of Actual Cut Volume and Annual Allowable Cut

1962 - 1971



C. Reforestation

Planting of 29,045 acres was done in the 10 year period. Red pine composed at least 85 percent of the trees planted. The rest was mainly white spruce. Seeding was done only on a trial basis. Seeding of red pine and white spruce has not been successful. Most areas planted were site prepared by shearing and windrowing and machine planted.

D. Timber Stand Improvement

Release work was done on 36,956 acres. Release of plantations accounted for an estimated 30,000 acres of the total. Records show croptree release on 432 acres. The actual amount of croptree release is closer to 800 acres as some of this work was reported under release and weeding. Pruning was accomplished on only 555 acres.

ECONOMY AND MARKETS

About 70 major timber producers operate on the Forest plus a large number of local residents who are part time small producers. Fifteen local timber processors are engaged in producing wood products from the timber resources and dependent to a significant degree for raw material from the Forest. Labor employed in woods work and manufacture of timber products makes up a large part of the local employment.

Local Timber Products Firms Purchasing N.F. Stumpage

Name	Location	Annual Consumption	% From Forest
Sawmills			
Rajala Mill Co.	Bigfork	5.0 MMBF	40
Rajala Timber Co.	Deer River	12.5 MMBF	66
Frank's Mill	Cass Lake	2.0 MMBF	50
Maurice Johnson	Bena	0.8 MMBF	90
Bena Lumber Co.	Bena	0.4 MMBF	25
Cohasset Mill & Lumber Co.	Cohasset	1.3 MMBF	50
Marcell Mill	Marcell	5.0 MMBF	70
Tobiason Bros.	Remer	2.0 MMBF	50
Convertible Products			
Remer Timber Co.	Remer	25,000 cords	40
Nu Ply	Bemidji	20,000 cords	20
Corcoran Timber Co.	Bemidji	25,000 cords	10
Wheeler Division- St. Regis Paper Co.	Cass Lake	13,000 cords	60
Mannila Mills (Boise Cascade)	Big Falls	50,000 cords	10
N.W. Paper Co.	Cloquet	300,000 cords	8
Blandin Paper Co.	Grand Rapids	100,000 cords	20

The market for aspen has increased considerably in the last 10 years. New plants and the expansion of existing mills in the area that use aspen have been significant. Further expansion in the use of aspen by the Blandin Paper Co., will occur with the operation of their flake board plant which is scheduled to start in 1973 and is expected to use 75,000 cords annually when in full production with expansion capability to 150,000 cords. At present, the Walker District suffers the most from a weak aspen market. This should improve in the next few years and the Forest should then be able to harvest the full allowable cut of aspen. Minor markets are available for the other species of convertible hardwood products. However, until markets exist for these other species of hardwood products our program cut should not exceed 144,000 cords.

III. TIMBER MANAGEMENT GOALS AND COORDINATION

Introduction

The aim of timber management is to grow and harvest timber crops to the best public advantage in accordance with sustained yield and multiple use principles. When markets exist for all timber products on the Forest, and financing is available, the programmed harvest will equal the potential yield. The result will be a more thrifty forest, less subject to insect and disease attack, greater diversity for wildlife habitat, increased timber production, and a more even flow of timber products in the future.

Areas supporting understocked stands are to be reduced by harvesting those that are operable and regenerating them into full stocking of desirable trees. Inoperable stands that will not become operable during the next ten year period should be programmed for site preparation treatment to regenerate the areas into fully stocked stands.

Intermediate cuts are to be made to the extent possible to achieve sivicultural treatment of the stands for maintaining optimum growth.

A. Long-Range Objectives

1. Establish a distribution of forest types that will provide a variety of forest products and be compatible with the various forest uses. Composition objectives as set for the Physiographic Regions on the Forest will be used as a guide in reaching this goal.

2. Obtain an age-class distribution of the forest stands that will provide an even flow of timber products, diversed wildlife habitat, while minimizing harmful effects on water, soil, air and aesthetics.

3. All areas of regulated commercial forest land will be managed to obtain fully stocked stands for desirable timber species and produce timber volumes to the full potential of the land when consistent with Multiple-Use Objectives.

4. Encourage markets capable of utilizing the full potential yield.

B. Short-Range Objectives.

1. Reforest 9,400 acres of conifer types receiving regeneration cuts in the plan period and 500 acres of upland brush areas.

2. Convert 8,100 acres of aspen and other hardwood stands to red pine or spruce by full site preparation and planting. Convert 6,700 acres of spruce-fir and other hardwood to aspen by artificial conversion following regeneration cuts.

3. Insure adequate regeneration of 45,000 acres of aspen and other hardwood stands receiving regeneration cuts on which artificial type maintenance site preparation measures are necessary.

C. Coordination.

Forest Multiple Use plans set forth the objectives and coordination requirements for the various management zones. Compartment Environmental Analysis and prescriptions set forth the specific action requirements to obtain individual resource goals in harmony with other uses. Project prescriptions must coordinate with the overall compartment goals.

The use of sound silviculture within the travel and water influence zones will be utilized to the fullest extent in achieving the desired goals.

IV. PLAN OF ACTION

A. Compartment Examination*

Compartment examination will be done on 553,800 acres of regulated commercial forest land during the plan period. During the first years of the plan, 83,070 acres will be examined annually until there are completed prescriptions three years ahead of compartment entry. After the three year backlog of completed compartment prescriptions is obtained, 55,380 acres of regulated commercial forest land will be examined annually.

Environmental Analysis Reports will be prepared for each compartment, followed by a multi-discipline review and approval by the Forest Supervisor authorizing initiation of projects described.

* See Appendix P, Q, R, S, T for proposed compartment entry schedules.

B. Timber Harvest

Lack of markets for hardwood pulpwood, other than aspen pulpwood, is the main reason the Forest is unable to program the full allowable harvest. An estimated 10% of the allowable harvest for aspen is unmarketable at present, but is expected that this will change by 1974 and markets will be sufficient. The birch pulpwood market is considered to be adequate for 50% of the allowable harvest. The Walker District has the poorest markets for timber on the Forest. Expanding markets at Grand Rapids and Deer River are starting to improve the markets for the Walker District.

C. Allowable Harvest Area

The allowable harvest is controlled by area. Regeneration cut acreages were determined by dividing the type acreage by the rotation age to determine the "biological" allowable harvest area. The "biological" allowable harvest area is the area which, under perfect marketing and acres conditions, should be regenerated each year. Silvicultural need was considered in determining the allowable acres. Intermediate cut acres are based on silvicultural prescriptions. There are 27,659 acres of upland types that are poorly stocked, but which have become merchantable since the inventory due to improved markets. Many stands previously scheduled for non-commercial treatments such as site preparation will now be harvested in addition to the regular allowable harvest so as to return them to full production.

USDA - Forest Service

POTENTIAL YIELD OR PROGRAMED ALLOWABLE HARVEST STATEMENT

(Instructions : FSM 2491)

☐ Potential Yield ☒ Programed Allowable Harvest

REGION NO	FOREST NO	SUB UNIT NO	STATE NO	CLASS 1 OR 2	WORK GROUP
09	03	00	27	1	00
(1-2)	(3-4)	(5-6)	(7-8)	(9)	(10-11)

		LAND CLASS CODE	ACTIVITY CODE	AREA M ACRES	SAWTIMBER M CUNITS	SAWTIMBER MMBF	PRODUCTS M CUNITS	PRODUCTS M CORDS
		12-13	14-16	17-23	24-30	31-37	38-44	45-51
STANDARD COMPONENT	PATCH, STRIP, STAND	50	110	1.7	6.3	4.0	12.6	16.0
	SHELTERWOOD-SEED TREE							
	Seed Cuts	50	130					
	Removels (overstory)	50	140					
	SELECTION	50	150					
	INTERMEDIATE	50	200	1.9	3.8	2.4	9.7	12.3
	P&M Ref. Backlog[1]	5_	400	2.7	0.0	0.0	0.0	0.0
	P&M TSI Backlog[2]	5_	500	3.8	0.0	0.0	0.0	0.0
		5_						
		5_						
		5_						
		5_						
		5_						
		5_						
	TOTAL P&M REF. BACKLOG[1]	X5_	400	3.0				
	TOTAL P&M TSI BACKLOG[2]	X5_	500	4.2				
		5_						
	STANDARD TOTAL	50		10.1	10.1	6.4	22.3	28.3
SPECIAL	Patch, Strip, Stand (W12+T12)	6_	110	0.1	0.2	0.1	0.5	0.6
	Intermediate (W12+T12)	6_	200	0.1	0.2	0.1	0.3	0.4
	P&M Ref. Backlog[1]	6_	400	0.3	0.0	0.0	0.0	0.0
	P&M TSI Backlog[2]	6_	500	0.4	0.0	0.0	0.0	0.0
		6_						
		6_						
	SPECIAL TOTAL	60		0.9	0.4	0.2	0.8	1.0
MARGINAL	REFORESTATION BACKLOG[1] P&M	~~71~~	400	0.0	0.0	0.0	0.0	0.0
	TSI BACKLOG[2] P&M	~~72~~	500	0.0	0.0	0.0	0.0	0.0
	ACCESS ROAD	~~73~~						
		7_						
		7_						
		7_						
		7_						
	MARGINAL TOTAL	70		0.0	0.0	0.0	0.0	0.0
UNREGULATED TOTAL		80		0.0	0.0	0.0	0.0	0.0
Potential or Programed TOTAL		99		11.0	10.5	6.6	23.1	29.3

EFFECTIVE PERIOD FY BASIS	
START (56-59)	END (60-63)
1975	1975

REMARKS: [1] Increases are earned at the rate of ___ (64-66) (1. Bd. ft. / 2. Cu. ft.) * per acre per year for each acre reforested since plan revision and will be harvested from standard areas.

[2] Increases are earned at the rate of ___ (68-70) (1. Bd. ft. / 2. Cu. ft.) * for each acre accomplished previous fiscal year and will be harvested from standard areas.

*Cross out cu. ft. or Bd. ft.

APPROVED BY:	TITLE:	DATE:
		3-12-74

USDA - Forest Service

POTENTIAL YIELD OR PROGRAMED ALLOWABLE HARVEST STATEMENT

(Instructions : FSM 2491)

☐ Potential Yield ☒ Programed Allowable Harvest

REGION NO	FOREST NO	SUB UNIT NO	STATE NO	CLASS 1 OR 2	WORK GROUP
09	03	00	27	2	00
(1-2)	(3-4)	(5-6)	(7-8)	(9)	(10-11)

		LAND CLASS CODE	ACTIVITY CODE	AREA M ACRES	SAWTIMBER M CUNITS	SAWTIMBER MMBF	PRODUCTS M CUNITS	PRODUCTS M CORDS
		12-13	14-16	17-23	24-30	31-37	38-44	45-51
STANDARD COMPONENT	PATCH, STRIP, STAND	50	110	6.1	23.7	15.0	35.6	45.1
	SHELTERWOOD-SEED TREE							
	Seed Cuts	50	130	0.2	0.2	0.1	1.6	2.0
	Removals (overstory)	50	140					
	SELECTION	50	150					
	INTERMEDIATE	50	200	0.4	1.6	1.0	2.5	3.2
	P&M Ref. Backlog[1]	5_	400	6.6	0.0	0.0	0.0	0.0
	P&M TSI Backlog[2]	5_	500	0.0	0.0	0.0	0.0	0.0
		5_						
		5_						
		5_						
		5_						
		5_						
		5_						
	TOTAL P&M REF. BACKLOG[1]	5_	400	10.0				
	TOTAL P&M TSI BACKLOG[2]	5_	500	0.0				
		5_						
	STANDARD TOTAL	50		13.3	25.5	16.1	39.7	50.3
SPECIAL	Patch, Strip, Stand (WIZ+TIZ)	6_	110	0.1	0.0	0.0	0.7	0.9
	Intermediate (WIZ+TIZ)	6_	200	0.0	0.0	0.0	0.1	0.1
	P&M Ref. Backlog[1]	6_	400	0.7	0.0	0.0	0.0	0.0
	P&M TSI Backlog[2]	6_	500	0.0	0.0	0.0	0.0	0.0
		6_						
		6_						
	SPECIAL TOTAL	60		0.8	0.0	0.0	0.8	1.0
MARGINAL	REFORESTATION BACKLOG[1] P&M	[illegible]	400	2.7	0.0	0.0	0.0	0.0
	TSI BACKLOG[2] P&M	[illegible]	500	0.0	0.0	0.0	0.0	0.0
	ACCESS ROAD	[illegible]						
	WEAK MARKETS	7_	100	1.3	4.6	2.9	6.5	8.2
		7_						
		7_						
		7_						
	MARGINAL TOTAL	70		4.0	4.6	2.9	6.5	8.2
UNREGULATED TOTAL		80		0.2	1.3	0.8	1.9	2.4
Potential or Programed TOTAL		99		18.3	31.4	19.8	48.9	61.9

EFFECTIVE PERIOD FY BASIS	
START (56-59)	END (60-63)
1975	1975

REMARKS: [1] Increases are earned at the rate of ___ (64-66) (1. Bd. ft. / 2. Cu. ft.)* per acre per year for each acre reforested since plan revision and will be harvested from standard areas.

[2] Increases are earned at the rate of ___ (68-70) (1. Bd. ft. / 2. Cu. ft.)* for each acre accomplished previous fiscal year and will be harvested from standard areas.

*Cross out cu. ft. or Bd. ft.

APPROVED BY:	TITLE:	DATE:
		3-12-74

VOLUMES NOT INCLUDED IN PROGRAMMED HARVEST

No Market	Cords
Balsam Poplar	6,000
Hardwood Pulpwood	15,000
Birch Pulpwood	8,000
	29,000

Allowable cut 173,000 cords - 29,000 = 144,000 cords programmed harvest.

Annual Allowat Harvest Acres

By Forest Type

Type	Regulated CFL Acres	Rotation Age	"Biological" 1/ Regeneration Cut Annual Acres	Prescribed Regeneration Cut Annual Acres	Annual Allowed Regeneration Cut Acres	Annual Intermediate Cut Acres
Spruce Fir	42,827	50	857	1,979	857	177
R/W Pine	59,300	120	494	90	90	1,088
Jack Pine	27,165	60	453	930	453	373
Swamp Conifer	12,641	100	126	633	126	--
Black Spruce	31,166	100	312	161	312	--
Tamarack	7,130	100	71	175	71	--
Oak	10,976	80	137	104	104	472
Aspen	204,743	45	4,550	7,844	4,550	883
N. Hdwd.	56,811	100	568	1,555	568	1,572
L. Hdwd.	38,808	100	388	701	388	1,307
P. Birch	49,029	80*	700	1,487	700	67
Total	540,596		8,656	15,659	8,219	5,939

1/ Type Acreage ÷ Rotation Age

* Site Index 60+

Acreage of regeneration cut prescriptions exceeds the "biological" regeneration cut acres except in the R/W pine type, black spruce, and oak. In the black spruce type the "biological" regeneration cut acres were used as the control to help even the age class distribution. Thirty percent of the black spruce stands are in the 80+ yr. age class and only 10% are in the 0-39 yr. age group.

Less than half of the spruce-fir acreage prescribed for regeneration cuts will be cut during the plan period. This means that about half of the 60-69 yr. age class in good condition will be considered for holding until the next plan period. The jack pine type is about in the same situation with less than half of the prescribed regeneration cuts scheduled for this period. Most stands in 50-59yr. age class will be considered for holding until the next plan period. The swamp conifer type has the largest imbalance between prescribed regeneration cut acres and the "biological" regeneration cut. It is doubtful if the scheduled regeneration cut acreage can be attained due to present markets. Fifty eight percent of the prescribed regeneration cut areas of aspen are scheduled for the period. About 70 percent of 40-49 year age class will be held over the next period. Stands in this age class will be closely examined for condition in determining prescriptions. In the northern hardwood type only about 37 percent of the prescribed regeneration cuts will be scheduled. Most of the pole stands less than 100 years old will not receive regeneration cuts during the plan period and some of the sawtimber stands in good condition will be carried over to the next plan period. The lowland hardwood and paper birch stands are scheduled for regeneration cuts on only about half of the acreage prescribed. Stand condition will be the dominant factor in determining which of these stands will have the regeneration cut deferred until the next plan period.

COMPOSITION OBJECTIVES FOR TOTAL
PERIODIC REGENERATION CUT AREA

FOREST TYPE	TOTAL ACRES TO BE REGENERATED	NATURAL TYPE MAINT.	ART. TYPE MAINT.	NATURAL CONVERSION			ARTIFICIAL CONVERSION				
				SW. CON.	L. HWD.	N. HDWD.	ASPEN	RED P.	SPR. FIR	SW. CON.	BLK.SP
Spruce-Fir	8,570	370	2,200	1,000			3,500	1,500			
Red/White P.	900		900								
Jack Pine	4,530		2,030					2,500			
Black Spr.	3,120	1,200	1,920								
Swamp Con.	1,260		1,260								
Tamarack	710	600		110							
Oak	1,040		400					640			
Aspen	45,500	800	36,200		500	1,500		4,000	2,000		500
N. Hdwd.	5,680		3,400				2,000		280		
L. Hdwd.	3,880	700	1,900							1,280	
P. Birch	7,000		3,020			500	1,200	2,080	200		
TOTALS	82,190	3,670	53,230	1,110	500	2,000	6,700	10,720	2,480	1,280	500

D. Regeneration and Reforestation

The total need during the plan period based on achieving the allowable regeneration cut acreage includes 19,500 acres of planting and seeding and 55,600 acres of regeneration site preparation.

Most of the coniferous acreage listed under artificial type maintenance requires site preparation and planting or seeding. Hardwood types listed for artificial type maintenance will mostly require site preparation involving the removal of residuals left after the timber sale operation.

Species conversion to red pine will require site preparation and planting. Species conversion to spruce-fir and black spruce includes site preparation and planting to white spruce or black spruce on much of the area and the rest is site preparation for natural conversion. Species conversion to the hardwood types require site preparation measures only.

V. SILVICULTURE

All timber types on the Forest except northern hardwoods will be managed as even-aged. Northern hardwoods will be managed under applicable marking guides to increase the component of desirable species. No intermediate cuts are planned this period in the aspen, jack pine, spruce-fir (predominantly fir), swamp conifers, black spruce, and tamarack types. Intermediate thinnings will be made at 10-year intervals when the stands become operable in the red pine, spruce-fir (predominantly spruce) and white pine types. One or two commercial thinnings may be made in the northern hardwoods, birch, lowland hardwoods and oak types prior to the regeneration cut depending on composition density and conditions. Strip, patch or group cuttings will be done in the swamp conifers, black spruce, and tamarack types to regenerate the stands. A shelterwood cut may be made in the swamp conifer type to increase the cedar composition.

Approximate Rotation Age By Species

Species	Approximate Rotation Age Rotation Age (Yrs.)	Residual Stocking To Intermediate Cuts (BA)
Red Pine	120	90-110
White Pine	120	90-110
Jack Pine	60	--
Balsam Fir	50	--
White Spruce	100	90
Black Spruce	100	--
Tamarack	100	--
Swamp Conifers	100	--
Aspen	45	--
Oak	100	70-90
Birch	40-80	60-80*
Lowland Hardwoods	100	70-90
N. Hardwoods	100	70-90

*Site Index 60+

VI. Control and Records

Control

Control of the allowable harvest is by acres. Regeneration cuts are not to exceed the allowable acreage by more than 10% for each type in the plan period. Intermediate cut acres are objectives only and may exceed the allowable

if sound silviculture is used in making the cuts. The maximum variation above the allowable shall not exceed 25% in any one year.

Records

The basic records are kept in the compartment folders. Form 2400-9 R9 is the inventory record and Form 2400-9a R9 is the accomplishment record. Summary records will be maintained as prescribed in FSM 2490.

VII. SUPPORTING ACTIVITIES

Fire Control

An average of 39 fires burned over 402 acres annually during the past ten-year period with a value loss of $7,000 annually. Timber operators cause an average of two fires annually, burning over five acres. The major cause of fires was incendiary and refuse burning. Fuels created by timber activities will be managed so as to meet current standards. Prescribed burning is a site preparation tool that can be used following regeneration cuts to prepare sites for reforestation or slash hazard reduction. Prescribed burns require control lines and control forces along with approved burning plans.

Engineering

Access road needs for timber in the next 10 years are estimated at 600 miles. The 600 miles consist of both new construction and up-grading present timber access roads. A transportation plan will be prepared for each compartment. Road needs will be furnished to Engineering immediately after the compartment prescription has been approved. All temporary spur roads will be closed following timber operations.

Property line establishment during the plan period is estimated at 900 miles. The schedule of property line establishment will be coordinated with the planned entry of compartments so this work will be completed prior to timber sale preparation.

Research and Administrative Studies

Three experimental forests are located on the Forest. The Marcell Experimental Forest is set aside for watershed studies. The Cut Foot Sioux Experimental Forest is used mainly in research studies on pine management. The Pike Bay Experimental Forest is used for aspen studies as well as conifer research.

The commercial Forest lands within the experimental Forests are classified as unregulated.

Administrative studies conducted by research on the Forest outside of the Experimental Forests boundaries are as follows:

Cass Lake District	Location
1. Portage Lake red pine plots cutting methods study NE-142	East of FR2131, and south of red pine seed production area, NE¼ Sec. 1 T144N, R29W
2. Lake 13 red pine cutting methods study NC-34	Near Lake 13, Sec. 13, T144N, R31W

3. Cuba Hill balsam cutting and release plots NC-73	West of Cuba Hill road, FR2133 NESE, & SENW, Sec. 33, T145N, R30W.
4. The effect of repeated short rotation harvesting on vigor and fiber production of aspen coppice NC-424	NENE, Sec. 24, T146N, R30W. SENW, Sec. 33, T145N, R29W. SENE, Sec. 16, T145N, R30W.

Deep River District	Location
1. Bena plots 1-4 red pine NC-179	Near Six Mile Lake Road FR2127 SW1/4, Sec. 31, T145N, R27W.
2. Red pine seed production and dispersal (seed traps) NC-198	North of Williams Narrows NESW, Sec. 26, T147N, R27W.

Marcell District	
1. Clubhouse Lake red pine cutting methods study NC-33	Near Clubhouse Lake campground Sec.12, T59N, R26W.
2. Pretzel Grove red pine plots NC-83	Near Clubhouse Lake campground FR2181, Sec. 6, T59N, R25W

Tree Improvement Program

The Birch Hill and Portage Lake Seed Production areas were set aside as a source of red pine seed, but have not proved successful, and will no longer

be managed for seed. The Gilfillen Seed Production area is managed as a source of White Spruce seed and will be kept for this purpose until it is no longer needed.

Status of Superior Tree Selection

Superior trees selected on the Forest include 31 white spruce, 26 black spruce, and 41 jack pine. There have also been 31 rust-resistant white pine trees selected. Seed and scion collections have been made from most of the white spruce, black spruce and white pine trees. Superior tree selections are now being made for yellow birch, paper birch and basswood. Two areas have been selected on the Cass Lake District for outplantings of superior tree progeny.

VIII. TRAINING

As soon as the plan is approved, a training session will be scheduled to present it to the District Rangers, TMA's and others who will be involved with the plan on the Forest. Followup training and review of the plan will be scheduled at two-year intervals as a refresher, to check on adherence and adequacy for present conditions.

INVENTORY PROCEDURES

This timber management plan has been prepared to set forth practices to be carried out during the plan period in accordance with sustained yield and timber resource development within multiple use guidelines. The Forest multiple use plan is the basic document used on the Forest.

The inventory of this National Forest began in August 1969 and was completed in June 1971. The aerial photographs were modified infrared of a scale 1:15, 840 taken during the summer of 1969. The first phase of the inventory was to install 111 Forest Survey 37.5 - Factor Ten Point clusters for future volume, growth and mortality. The second phase was to remeasure 300 permanent BAF 10 plots established during the previous inventory. The combination of phases I and II formed the basis for the total inventory volume, growth and mortality estimates.

During phase three 21,000 photo dots were used to classify the forest and non-forest land area. Approximately 4,200 of these points were examined stereoscopically to determine forest type, size, and density classes. Approximately 850 BAF 10 temporary plots were installed to determine allowable cut area and volume, site index, age class and management description information.

The field work for this inventory was carried out by two project foresters assigned to the Forest. Before independent field work was permitted, the foresters were trained by the Forest Supervisor's Timber Management staff to make Silvicultural prescriptions and volume estimates.

APPENDIX

A Regulated Commercial Forest Land by Type and Stocking
Chippewa National Forest

(Acres)

FOREST TYPE	TOTAL	RESTOCKING			POLETIMBER			SAWTIMBER		
		POOR	MEDIUM	WELL	POOR	MEDIUM	WELL	POOR	MEDIUM	WELL
Spruce Fir	42,827	651	448	4,143	3,026	11,654	19,111	163	652	2,979
White Pine	4,188	-	-	-	-	-	304	-	1,512	2,372
Red Pine	55,112	-	3,025	17,183	-	2,473	8,763	1,237	3,313	19,118
Jack Pine	27,165	-	-	234	226	1,537	15,299	-	2,634	7,235
Swamp Conifers	12,641	-	151	1,728	1,715	4,690	4,198	-	-	159
Black Spruce	31,166	612	917	7,855	2,654	10,436	8,203	326	-	163
Tamarack	7,130	-	-	956	930	2,238	2,667	339	-	-
Oak	10,976	-	-	-	1,440	3,351	4,215	-	1,061	909
Aspen	204,743	2,811	5,074	23,382	7,084	42,551	108,788	2,334	5,880	6,839
Northern Hdwds.	56,811	-	708	81	926	22,229	18,572	310	5,815	8,170
Lowland Hdwds.	38,808	150	151	878	3,037	13,894	12,243	1,267	2,246	4,942
Paper Birch	49,029	-	1,279	163	7,373	15,050	23,405	-	1,107	652
Total Stocked	540,596	4,224	11,753	56,603	28,411	130,103	225,768	5,976	24,220	53,538

	Area
Lowland Brush	8,024
Upland Brush	1,074
Open	4,095

Total Regulated C.F.L. 553,789

B Unregulated Commercial Forest Land by Forest Type and Stocking
Chippewa Working Circle

(Acres)

Forest Type	Total	RESTOCKING			POLETIMBER			SAWTIMBER		
		Poor	Medium	Well	Poor	Medium	Well	Poor	Medium	Well
Spruce Fir	164	-	-	-	-	23	141	-	-	-
White Pine	240	-	-	-	-	40	20	80	40	60
Red Pine	2,232	-	-	284	-	42	882	5	162	857
Jack Pine	918	-	-	86	-	32	430	-	-	370
Swamp Conifers	10	-	-	-	-	-	5	-	-	5
Black Spruce	201	-	14	8	12	29	138	-	-	-
Tamarack	60	-	-	-	15	10	35	-	-	-
Oak	11	-	-	-	2	4	5	-	-	-
Aspen	2,221	20	158	541	6	176	699	10	110	501
Northern Hdwds.	2,111	-	-	200	-	1,500	222	40	30	69
Paper Birch	215	-	-	-	-	50	165	-	-	-
Total Stocked	8,383	20	172	1,119	35	1,906	2,742	135	392	1,862

	Area
Lowland Brush	47
Open	34

Total Unregulated C.F.L. 8,464

C Reserved Land Area
Chippewa National Forest

(Acres)

Forest Type	Total
Hardwood	1,057
Softwood	872
Total	1,929

	Area	
Lowland Brush	8	Unproductive 450
Total Productive	1,937	

Total 2,387

D Area of Regulated bered Commercial Forest
Land by Forest Type and Age Class
Chippewa National Forest

Acres

FOREST TYPE	TOTAL	AGE CLASS - YEARS									
		0-09	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90+
Spruce Fir	42,827	3,352	1,442		7,928	10,305	8,265	5,689	5,203	643	
White Pine	4,188				320		1,542		438	944	944
Red Pine	55,112	14,659	2,418	3,246	7,668	4,210	5,075	4,844	5,180	2,277	5,535
Jack Pine	27,165		234		5,366	11,182	6,954	1,566	1,863		
Swamp Conf.	12,641		627		151	1,405	2,523			655	7,280
Black Spruce	31,166		2,546		512	3,144	6,488	3,825	5,209	6,782	2,660
Tamarack	7,130			956		578	804		1,345	2,297	1,150
Oak	10,976				2,340	2,282	4,882	770	351		351
Aspen	204,743	21,157	7,610	12,060	77,595	67,252	13,370	4,117	888	694	
Northern Hdwd.	56,811		626	913	5,297	13,974	7,298	8,031	3,575	3,515	13,582
Lowland Hdwd.	38,808	878	301		1,201	2,957	5,538	4,149	5,262	7,644	10,878
Paper Birch	49,029		803		6,782	19,266	9,780	8,504	1,459	2,284	151
Upland Brush	1,074	1,074									
Lowland Brush	8,024	8,024									
Open	4,095	4,095									
All Types	553,789	53,239	16,607	17,175	115,160	136,555	72,519	41,495	30,773	27,735	42,531

E Area of Regulated Timbered Commercial Forest Land by Forest Type and Site Class
Chippewa National Forest

(Acres)

FOREST TYPE	TOTAL	SITE INDEX CLASS (00-25)	(26-35)	(36-45)	(46-55)	(56-65)	(66-75)	(76-85)	(86+
Spruce Fir	42,827		152	3,987	8,815	17,943	8,771	2,212	94
White Pine	4,188				2,120	1,748	320		
Red Pine	55,112			1,644	17,728	22,725	12,019	996	
Jack Pine	27,165		75		4,540	13,112	8,337	1,101	
Swamp Conf.	12,641		10,301	1,369	971				
Black Spruce	31,166		10,362	18,254	1,931	619			
Tamarack	7,130		709	4,913	930	578			
Oak	10,976				1,924	8,133	839	80	
Aspen	204,743		2,029		1,867	18,247	56,980	84,923	40,69
Northern Hdwd.	56,811			4,585	16,756	21,615	11,624	2,231	
Lowland Hdwd.	38,808			5,750	16,142	13,777	3,139		
Paper Birch	49,029				9,027	23,809	13,328	2,865	
Upland Brush	1,074			296	300	478			
Lowland Brush	8,024		6,590		1,434				
Open	4,095		1,160	320		696	1,919		
All types	553,789		31,378	41,118	84,485	143,480	117,276	94,408	41,64

F. Total Net Volume on Timbered Commercial Forest Land by Species and Kind of Material

SPECIES	GROWING STOCK 1/ CORDS	SAWLOG MATERIAL 2/ MBF
Balsam Fir	348,672	43,241
White Pine	364,873	153,019
Red Pine	948,938	354,227
Jack Pine	488,330	92,158
White Spruce	55,000	21,389
Cedar	163,089	30,996
Black Spruce	254,473	14,926
Tamarack	229,643	17,925
Bur Oak	149,002	31,802
Black Oak	8,735	-
Red Oak	217,817	41,667
Aspen	2,354,356	463,821
Basswood	334,907	76,872
Yellow Birch	8,610	2,820
Sugar Maple	115,167	28,881
Red Maple	36,611	2,008
Black Cherry	4,301	-
Black Ash	384,689	70,493
hite Ash	17,881	1,461
Elm	140,134	44,705
Paper Birch	919,530	139,781
Balsam Poplar	272,967	41,268
Other Hardwoods	6,399	-
TOTAL	7,824,124	1,673,460

1/ Net volume of all live merchantable trees 5.0" d.b.h. and larger to a variable top diameter inside bark of not less than 4.0".

2/ Softwoods - 9.0" d.b.h. & larger to a variable top d.o.b. of not less than 8.0".
Hardwoods - 9.0" d.b.h. & larger to a variable top d.o.b. of not less than 8.0".

G. Net Volume of Growing Stock and Sawtimber on Timbered Commercial Forest Land by Species and Size Class. Chippewa National Forest

SPECIES	TOTAL	GROWING STOCK			SAWTIMBER	
		POLES[1]	SMALL SAW[2]	LARGE SAW[3]	SMALL[2]	LARGE[3]
Softwoods:	M Cubic Ft.	M Cubic Ft.	M Cubic Feet	M Cubic Feet	MBF	MBF
Balsam Fir	27,545	20,713	6,624	208	41,927	1,314
White Pine	28,825	4,648	9,416	14,761	59,598	93,421
Red Pine	74,966	18,998	17,703	38,265	112,041	242,186
Jack Pine	38,578	24,017	13,441	1,120	85,069	7,089
White Spruce	4,345	965	1,363	2,017	8,627	12,762
White Cedar	12,884	7,987	4,434	463	28,064	2,932
Black Spruce	20,104	17,745	2,359	-	14,926	-
Tamarack	18,142	15,310	2,832	-	17,925	-
Total	225,389	110,383	58,172	56,834	368,177	359,704
Hardwoods:						
Oak	29,669	18,061	8,683	2,925	54,958	18,511
Aspen	185,994	112,711	66,434	6,849	420,462	43,359
wood	26,458	14,312	9,937	2,209	62,894	13,978
low Birch	680	234	446	-	2,820	-
Sugar Maple	9,098	4,535	3,898	665	24,672	4,209
Red Maple	2,892	2,575	317	-	2,008	-
Ash	31,803	20,434	9,669	1,700	61,197	10,757
Elm	11,071	4,008	4,567	2,496	28,907	15,798
Paper Birch	72,643	50,557	19,630	2,456	124,238	15,543
Balsam Poplar	21,564	15,044	6,520	-	41,268	-
Other Hardwoods	845	845	-	-	-	-
Total	392,717	243,316	130,101	19,300	823,424	122,155
All Species	618,106	353,699	188,273	76,134	1,191,601	481,859

1/ Includes material from 5.0" - 8.9" d.b.h.

2/ Includes material from 9.0" - 14.9" d.b.h.

3/ Includes material 15.0" + d.b.h.

H Net annual Growth of Growing Stock and Sawtimber on Timbered Commercial Forest Land by Species, Chippewa National Forest

SPECIES	GROWING STOCK[1/]		SAWTIMBER[2/]
	(Cords - M Cu. Ft.)		(M. BD. FT. SCRIBNER)
SOFTWOODS:			
Balsam Fir	14,822	1,171	1,178
White Pine	11,395	900	5,025
Red Pine	29,996	2,370	9,216
Jack Pine	14,516	1,147	683
White Spruce	720	57	491
Black Spruce	3,867	305	248
Tamarack	8,856	700	702
White Cedar	8,202	648	1,767
Total	92,374	7,298	19,310
HARDWOODS:			
Oak	13,410	1,059	3,333
Aspen	131,559	10,393	18,879
Basswood	11,948	944	3,870
ow Birch	163	13	47
ugar Maple	6,903	545	2,893
Red Maple	2,826	223	---
Ash	11,445	904	4,051
Elm	3,416	270	1,717
Paper Birch	37,192	2,938	6,909
Balsam Poplar	14,351	1,134	2,523
Total	233,213	18,423	44,222
All Species	325,587	25,721	63,532

1/ Net volume of all live merchantable trees 5.0" d.b.h. and larger to a variable top diameter inside bark of not less than 8.0".

2/ All live merchantable trees 9.0" d.b.h. and larger to a variable top diameter inside bark of not less than 8.0".

I Area of Regulated, Stocked Commercial Forest Land by Forest Type and Timber Stand Improvement Needs Chippewa National Forest

(ACRES)

FOREST TYPE	TOTAL	NO TREATMENT	CULL TREE REMOVAL OR THINNING	RELEASE
Spruce-Fir	42,827	39,191	2,710	926
White Pine	4,188	3,750	438	-
Red Pine	55,112	37,553	6,991	10,568
Jack Pine	27,165	25,676	1,489	-
Swamp Conifers	12,641	10,816	1,825	-
Black Spruce	31,166	31,166	-	-
Tamarack	7,130	7,130	-	-
Oak	10,976	4,390	6,586	-
n	204,743	177,784	7,924	19,035
Northern Hdwds.	56,811	23,282	33,529	-
Lowland Hdwds.	38,808	23,914	14,016	878
Paper Birch	49,029	44,006	3,854	1,169
All Types	540,596	428,658	79,362	32,576

J Forest Types by Age Class, Rotation Age, and Desirable Mature, Regulated, Stocked Commercial Forest Land, Chippewa National Forest

(PERCENT)

FOREST TYPE	ROTATION AGE	AGE CLASS			DESIRABLE MATURE
		IMMATURE	MATURE	OVERMATURE	
Spruce-Fir	50	54	19	27	20
Red-White Pine	120	98	2	-	8
Jack Pine	60	87	6	7	17
Swamp Conifer	100	89	11	-	10
Oak	100	97	3	-	12
Aspen	45	74	17	9	22
Northern and Lowland Hardwoods	100	75	25	-	12
Paper Birch	80*	95	5	-	12

*Site Index 60+

K Total Area by Forest Type and Stocking
Chippewa N.F.

(ACRES)

FOREST TYPE	TOTAL	RESTOCKING			POLETIMBER			SAWTIMBER		
		POOR	MEDIUM	WELL	POOR	MEDIUM	WELL	POOR	MEDIUM	WELL
Spruce Fir	42,991	651	488	4,143	3,026	11,677	19,252	163	652	2,979
White Pine	4,428	-	-	-	-	40	324	80	1,552	2,432
Red Pine	57,344	-	3,025	17,467	-	2,515	9,645	1,242	3,475	19,975
Jack Pine	28,083	-	-	320	226	1,569	15,729	-	2,634	7,605
Swamp Conifers	12,651	-	151	1,728	1,715	4,690	4,203	-	-	164
Black Spruce	31,367	612	931	7,863	2,666	10,465	8,341	326	-	163
Tamarack	7,190	-	-	956	945	2,248	2,702	339	-	-
Oak	10,987	-	-	-	1,442	3,355	4,220	-	1,061	909
Aspen	206,964	2,831	5,232	23,923	7,090	42,727	109,487	2,344	5,990	7,340
Northern Hdwd.	58,922	-	708	281	926	23,729	18,794	350	5,895	8,239
Lowland Hdwds.	38,808	150	151	878	3,037	13,894	12,243	1,267	2,246	4,942
Paper Birch	49,244	-	1,279	163	7,373	15,100	23,570	-	1,107	652
Total Stocked	548,979	4,244	11,925	57,722	28,446	132,009	228,510	6,111	24,612	55,400

	Area
Lowland Brush	8,071
Upland Brush	1,074
Open	4,129
Total All CFL	562,253

Unproductive Area
Total 25,841

Total Area 645,739

Nonforest Area

Water	8,312
Open	6,871
Marsh	31,005
Other	9,070
Total	55,258

Reserved Area

Productive	1,937
Unproductive	450
Total	2,387

L Area Summary

Beltrami County (Acres) Chippewa National Forest

Forest Type	Total	RESTOCKING			POLETIMBER			SAWTIMBER		
		Poor	Medium	Well	Poor	Medium	Well	Poor	Medium	Well
Spruce Fir	5,004	-	-	408	755	439	3,402	-	-	-
White Pine	1,161	-	-	-	-	-	-		1,161	-
Red Pine	4,915	-	150	1,983	-	-	1,272	151	301	1,058
Jack Pine	3,499	-	-	75	226	301	2,746	-	151	-
Swamp Conifers	452	-	151	-	151	-	150	-	-	-
Black Spruce	4,479	-	151	2,038	569	-	1,721	-	-	-
Tamarack	490	-	-	-	151	-	-	339	-	-
Aspen	16,948	-	-	2,940	885	4,926	7,411	408	378	-
Northern Hdwds.	4,838	-	-	-	-	-	4,537	150	151	-
Lowland Hdwds.	4,136	-	-	-	1,568	1,905	633	-	-	-
Paper Birch	5,311	-	1,279	-	529	2,573	930	-	-	-
Oak	356	-	-	-	2	3	-	-	351	-
Total Stocked	51,589	-	1,731	7,444	4,836	10,147	22,832	1,048	2,493	1,058

	Area
Lowland Brush	1,468
Upland Brush	300
Open	1,376
Total CFL	54,733

Unproductive Area
Total 1,766

Total Area 60,917

Reserved Area
Total 79

Nonforest Area

Water	1,207
Open	937
Marsh	1,810
Other	385
Total	4,339

M Area Summary

Cass County (Acres) Chippewa National Forest

Forest Type	Total	RESTOCKING			POLETIMBER			SAWTIMBER		
		Poor	Medium	Well	Poor	Medium	Well	Poor	Medium	Well
Spruce Fir	10,489	-	448	2,328	159	2,930	4,624	-	-	-
White Pine	3,119	-	-	-	-	40	324	80	391	2,284
Red Pine	26,370	-	1,239	10,983	-	1,981	4,435	606	2,011	5,115
Jack Pine	15,262	-	-	159	-	763	9,042	-	2,024	3,274
Swamp Conifers	4,771	-	-	1,565	960	304	1,778	-	-	164
Black Spruce	9,316	159	150	3,764	640	3,014	1,589	-	-	-
Tamarack	2,514	-	-	797	15	329	1,373	-	-	-
Aspen	90,751	1,560	3,890	11,722	3,815	23,887	40,621	800	2,218	2,238
Northern Hds.	30,274	-	708	118	630	13,114	10,241	200	1,872	3,391
Lowland Hdwds.	13,759	-	-	-	750	8,165	3,600	160	617	467
Paper Birch	23,160	-	-	-	4,745	8,628	9,787	-	-	-
Oak	9,872	-	-	-	1,440	3,352	4,220	-	710	150
Total Stocked	239,657	1,719	6,435	31,436	13,154	66,507	91,634	1,846	9,843	17,083

	Area
Lowland Brush	2,030
Upland Brush	478
Open	494
Total CFL	242,659

Unproductive Area	
Total	11,304
Total Area	284,334

Reserved Area*	
Total	1,660

Nonforest Area

Water	2,320
Open	3,104
Marsh	18,592
Other	4,695
Total	28,711

* Includes 450 acres of unproductive area

N AREA SUMMARY

Itasca County (Acres) Chippewa National Forest

FOREST TYPE	TOTAL	RESTOCKING			POLETIMBER			SAWTIMBER		
		POOR	MEDIUM	WELL	POOR	MEDIUM	WELL	POOR	MEDIUM	WELL
Spruce Fir	27,498	651	-	1,407	2,112	8,308	11,226	163	652	2,979
White Pine	148	-	-	-	-	-	-	-	-	148
Red Pine	26,059	-	1,636	4,501	-	534	3,938	485	1,163	13,802
Jack Pine	9,322	-	-	86	-	505	3,941	-	459	4,331
Swamp Conifers	7,428	-	-	163	604	4,386	2,275	-	-	-
Black Spruce	17,572	453	630	2,061	1,457	7,451	5,031	326	-	163
Tamarack	4,186	-	-	159	779	1,919	1,329	-	-	-
Aspen	99,265	1,271	1,342	9,261	2,390	13,914	61,455	1,136	3,394	5,102
Northern Hdwds.	23,810	-	-	163	296	10,615	4,016	-	3,872	4,848
Lowland Hdwds.	20,913	150	151	878	719	3,824	7,980	1,107	1,629	4,475
Paper Birch	20,773	-	-	163	2,099	3,899	12,853	-	1,107	652
Oak	759	-	-	-	-	-	-	-	-	759
Total Stocked	257,733	2,525	3,759	18,842	10,456	55,355	114,044	3,217	12,276	37,259

	Area
Lowland Brush	4,573
Upland Brush	296
Open	2,259
Total CFL	264,861

	Area
Unproductive Total	12,771
Total Area	300,488

	Area
Reserved Area Total	648

Nonforest Area

Water	4,785
Open	2,830
Marsh	10,603
Other	3,990
Total	22,208

o Compartments and Average Acreage by Ranger Districts

RANGER DISTRICTS	NUMBER OF COMPARTMENTS	AVERAGE ACRES OF C.F.L.
Blackduck	282	123,236
Cass Lake	153	99,300
Deer River	288	128,786
Marcell	195	116,129
Walker	209	94,802
TOTAL	1,127	562,253

PLANNED ENTRY - BLACKDUCK RANGER DISTRICT

282 Compartments

72	73	74	75	76	77	78	79	80	81
10	1	3	5	13	2	4	6	9	73
20	12	37	8	25	11	17	7	26	82
27	23	41	16	34	22	18	14	29	99
42	32	50	19	35	28	30	15	33	103
48	36	60	21	38	39	31	43	46	106
75	52	61	78	56	49	40	54	47	110
77	57	84	98	64	53	44	62	51	121
88	66	86	101	68	55	59	70	58	123
119	67	87	104	109	63	80	71	92	128
133	69	96	113	114	65	89	79	116	131
138	81	108	117	125	74	72	85	126	132
140	105	127	120	135	76	93	90	158	139
142	111	160	130	178	95	112	91	163	161
165	122	168	136	181	100	118	97	144	145
166	137	180	159	195	129	124	102	146	154
179	141	150	157	209	134	143	107	94	151
171	162	174	147	203	164	218	115	155	177
170	184	188	148	204	182	183	167	192	212
211	193	206	202	207	198	191	152	175	190
214	196	226	217	187	215	172	176	210	200
186	201	231	225	149	45	199	194	83	216
153	205	236	232	169	173	189	197	248	279
230	213	222	256	185	243	245	242	240	269
254	228	252	258	24	255	264	250	271	281
208	233	253	267	234	263	224	276	247	259
239	235	274	273	257	261	282	223	246	237
241	262	244	275	272	251	265	227	229	221
266	277	260	249	219	238	270	268	220	280
	156						278		

PLANNED ENTRY - CASS LAKE RANGER DISTRICT

153 Compartments

72	73	74	75	76	77	78	79	80	81
3	11	1	8	2	25	12	4	9	7
6	18	10	17	5	32	28	14	13	15
46	23	19	40	27	33	31	16	45	21
47	34	24	44	29	37	43	20	53	22
48	50	30	52	35	42	49	26	56	51
55	63	38	64	36	77	74	41	66	59
57	67	39	68	61	84	80	54	72	60
69	81	58	75	65	90	91	79	73	62
70	86	71	76	78	97	98	85	93	82
88	87	83	89	100	101	104	95	105	99
96	111	94	92	106	107	110	102	108	103
139	113	115	109	114	125	128	134	119	112
141	126	133	124	117	143	129	137	121	116
148	151	136	130	120	144	131	140	122	118
		142	138	145	127	135	146	123	132
			150			147	152		149
						153			

R

PLANNED ENTRY - DEER RIVER DISTRICT

288 Compartments

72	73	74	75	76	77	78	79	80	81
1	3	4	6	7	2	5	24	22	11
8	10	14	9	12	16	15	26	28	13
20	19	33	17	18	29	25	37	38	23
34	30	53	21	39	31	44	43	58	36
47	35	61	27	45	40	48	52	66	56
63	42	64	32	54	49	50	57	73	60
69	55	68	41	59	51	65	71	80	77
75	62	78	46	85	79	70	74	89	92
81	67	83	82	104	96	72	76	99	100
91	87	86	88	120	108	98	84	126	102
103	90	93	94	132	110	113	95	138	107
111	101	97	105	136	116	121	112	144	109
118	115	106	124	140	131	135	114	163	130
123	119	117	129	141	166	152	137	174	133
125	148	122	142	151	168	158	162	177	147
127	154	134	149	157	172	161	169	184	153
128	160	145	173	191	179	170	175	193	156
139	167	150	178	201	199	176	186	200	159
143	183	164	181	209	217	187	188	211	182
146	185	171	194	222	223	197	192	219	208
155	189	180	202	230	224	216	218	227	214
165	190	195	203	241	231	221	233	238	260
198	196	204	207	250	239	225	236	246	263
226	205	210	215	252	249	235	243	254	270
262	206	213	229	269	253	244	251	255	285
264	212	220	232	279	267	247	259	272	
275	234	228	242	288	280	265	271	283	
278	237	240	256		287	268	282		
	248	245	258			281			
	261	257	266						
	273	276	277						
	274	286							
	284								

PLANNED ENTRY - MARCELL RANGER DISTRICT

195 Compartments

72	73	74	75	76	77	78	79	80	81
5	2	3	10	1	17	16	8	46	4
9	7	18	11	38	41	27	21	47	6
22	12	24	14	39	51	40	42	50	13
52	19	25	15	55	75	48	43	58	26
57	23	29	20	65	80	49	44	73	28
67	54	35	30	69	85	56	61	102	32
78	59	36	31	70	86	68	72	107	33
82	77	37	84	71	92	89	95	111	34
96	81	45	93	76	94	91	98	112	53
118	83	79	103	160	97	106	99	124	74
130	100	90	120	161	167	117	108	145	87
132	101	104	123	165	172	122	115	146	88
133	126	127	131	175	174	128	121	151	105
150	182	134	144	176	178	148	147	154	110
152	202	149	162	183	181	155	158	171	129
153		156	177	189	184	157	159	173	180
169		179	199	190	185	187	166	186	188
170		195		201	191	196	168	192	197
193					200		194		198

Compartments 109, 113, 114, 116, 117, 125, 135, 136, 137, 138, 139, 140, 141, 142, 143 will be entered as directed in Suomi Hills Management Plan.

No Compartment Numbers 60, 62, 63, 64, 66, 163 and 164

T

PLANNED ENTRY - WALKER RANGER DISTRICT

209 Compartments

72	73	74	75	76	77	78	79	80	81
21	9	28	1	15	3	2	6	10	4
58	43	31	24	20	5	11	7	14	13
62	44	55	26	30	8	17	16	19	18
67	53	64	65	73	12	25	32	27	22
74	80	75	77	79	34	35	33	29	23
76	85	78	87	89	46	40	41	36	37
101	86	84	95	98	47	49	48	38	42
105	93	94	99	109	50	51	54	39	52
119	96	106	102	146	60	68	69	45	57
125	100	117	115	153	63	71	81	56	61
127	132	120	122	157	72	90	97	59	70
131	143	123	124	166	88	92	110	66	83
136	159	128	135	172	91	104	114	82	108
137	169	133	139	173	107	111	140	103	116
138	170	154	147	174	112	113	141	144	121
158	177	167	161	178	150	118	148	162	126
186	182	168	176	179	160	134	156	171	129
189	191	190	188	187	163	149	165	180	130
196	192	193	198	199	164	152	183	181	142
	194			205	197	155	184	195	145
				207	200	204	185	201	151
				209	203	208	202	206	175